

DRAFT

Fire Regime Condition Class (FRCC) Interagency Handbook Reference Conditions

Modeler: Roger D. Fryar

Date: 06/02/2004

PNVG Code: TMPP Table
Mountain Pine/Pitch Pine

Potential Natural Vegetation Group: Appalachian Oak Forest – Table Mountain /Pitch Pine –
Xeric Pine-Oak Eastern

Geographic Area: Southern Appalachians

Description: Potential natural vegetation group once common in the Southern Appalachians, typically occupying xeric to dry sites at elevations between 1500 and 3500 feet on ridgetops, western, south and southwestern aspects. Often described as “ridgetop communities” occupying the driest and most “fire-prone” of sites. Overstory pine species (Table mountain and pitch pine) dominate with up to 70% species specific. Scarlet oak, chestnut oak, sometimes Virginia pine, and occasionally eastern white pine and/or shortleaf pine occur in overstories. Midstory species include blackgum, red maple, sourwood, black locust, and mountain laurel, along with sprouts of American Chestnut abundant in some stands. The lower canopy vegetation in table mountain pine stands can include rosebay rhododendron (*Rhododendron maximum*), Catawba rhododendron (*R. catawbiense*), Piedmont rhododendron (*R. minus*), mountain-laurel (*Kalmia latifolia*), mountain winterberry (*Ilex montana*), hobblebush (*Viburnum alnifolium*), blueberries (*Vaccinium* spp.), sawbrier (*Smilax glauca*), greenbrier (*S. rotundifolia*), fetterbush (*Pieris floribunda*), white-alder (*Clethra acuminata*), black huckleberry (*Gaylussacia baccata*), bear huckleberry (*G. ursina*), wild grape (*Vitis* spp.), and male blueberry (*Lyonia ligustrina*). Mean shrub cover in the Great Smoky Mountains amounted to 65 percent in table mountain stands and 84 percent in table mountain pine-pitch pine stands. Typical heath understories includes shrubs of mountain laurel (*Kalmia latifolia*), blueberry (*Vaccinium* spp.), and huckleberry (*Gaylussacia* spp.). Ground cover may include galax (*Galax urceolata*), sedges (*Carex* spp.) and uncommon herbaceous plants such as turkey-beard (*Xerophyllum asphodeloides*). Rare deciduous species, such as witch-alder (*Fothergilla major*) and bear oak (*Quercus ilicifolia*), are associated with pine-heath and xeric oak-pine communities (Schafale and Weakley 1990). Litter layers are usually light but can accumulate over in older closed stands to up to 6.4 inches (Randles, Van Lear, Waldrop and Simon 1998?).

Succession: Succession to hardwood components can occur when there has been an absence of periodic fire and a presence non-pine understories. Likely stand-replacement species include red maple, mountain laurel, scarlet and chestnut oaks. Patch sizes can range from a few acres to 300+ acres but typically are in the range of 10 to 50 acres. Fires can be surface fires and mosaic (mixed severity) types.

Fire Regime Description: Table mountain pine usually is regarded as having a stand replacement fire regime, but a mixed regime may be more accurate as it produces the

seedbed conditions needed for survival of seedlings. www.srs.fs.fed.us/sustain. Estimated fire return intervals range 3-12 years with mosaic fires common (particularly with table-mountain pine). Pitch pine is less fire-dependent than table-mountain pine but is strongly fire-adapted. Fire return intervals for the two species appear to fall in the range above.

Model Assumptions: For model purposes, the following definitions were used for closed versus open classes:

- <10% prairie
- 11-25% savanna
- 26-60% woodland (open)
- 61%+ forest (closed)

Vegetation Type and Structure

Class*	Percent of Landscape	Description
A: post replacement	15	Dense reproduction 5 to 15 feet in height. Typically sparse understory. Fires occurring in this class are nearly always stand-replacing. Dense regeneration layer with <10 canopy cover.
B: mid-seral closed	15	Mid-seral with closed canopy, pine with very occasional oak or other hardwood in overstory. Very limited herbaceous understory development. Fires occurring in this class are mixed severity with mortality dependent on fire intensity and seasonality. Stands are dense > 35% canopy cover (crown closure estimate)
C: mid-seral open	25	Mid-development, open canopy. Woodland with herbaceous understory. In the absence of fire, herbaceous vegetation is often replaced by mountain laurel and/or other woody species. Fires in this class are usually not stand-replacement, < 35% canopy cover, in natural fire regime, understory is fire-adapted vegetation
D: late-seral open	25	Late-development, open canopy pine-oak to oak-pine in composition. In the absence of fire, herbaceous vegetation is often replaced by mountain laurel and/or other woody species. Fires in this class are usually not stand-replacement, < 35% canopy cover, fire-adapted understory
E: late-seral closed	20	Late-seral, closed canopy, pine-oak dominated overstory community. Some herbaceous cover and shade-tolerant woody shrubs. Gaps and other openings from overstory mortality are common (5-25 % area). Fires occurring in this class are mixed severity. > 35% canopy cover
Total		100

*Formal codes for classes A-E are: AESP, BMSC, CMSO, DLSO, and ELSC, respectively.

Fire Frequency and Severity

Fire Severity	Fire Frequency (yrs)	Probability	Percent, All Fires	Description
Replacement Fire	101	.0099	5	Fires killing most stems Primarily surface fire in all classes. Some mosaic fire.
Non-Replacement Fire	5	.1929	95	
All Fire Frequency*		4.9	.2029	100

*All Fire Probability = sum of replacement fire and non-replacement fire probabilities.
All Fire Frequency = inverse of all fire probability (previous calculation).

References

U.S. Department of Agriculture, Forest Service, Southern Forest Research Station, Southern Forest Resource Assessment, [Online]. Available: <http://www.srs.fs.fed.us/sustain>

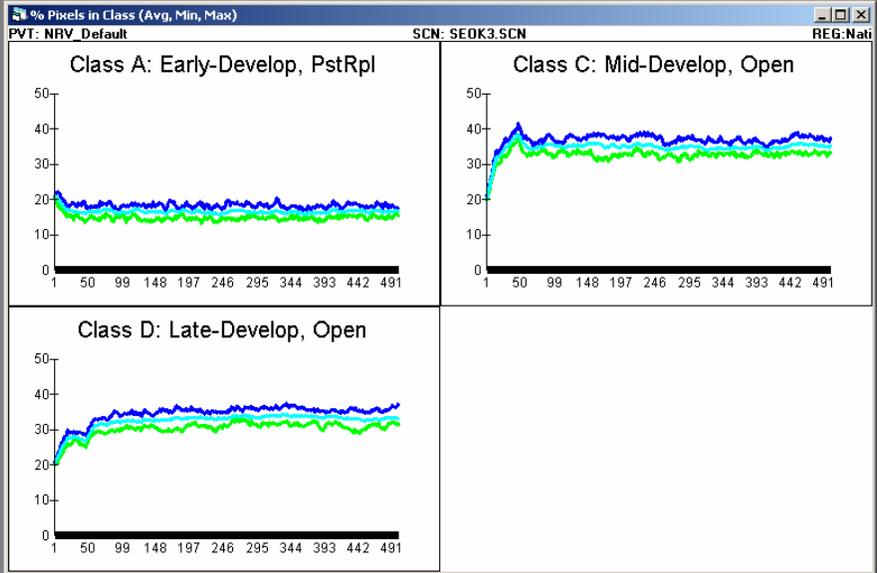
Brown, James K.; Smith, Jane Kapler, eds. 2000. Wildland fire in ecosystems: effects of fire on flora. Gen. Tech. Rep. RMRS-GTR-42-vol. 2. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 257 p.

Schmidt, Kirsten M, Menakis, James P., Hardy, Colin C., Hann, Wendel J., Bunnell, David L. 2002. Development of coarse-scale spatial data for wildland fire and fuel management. Gen. Tech. Rep. RMRS-GTR-87. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 41 p. + CD.

U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (2002, December). Fire Effects Information System, [Online]. Available: <http://www.fs.fed.us/database/feis/>.

VDDT File Documentation

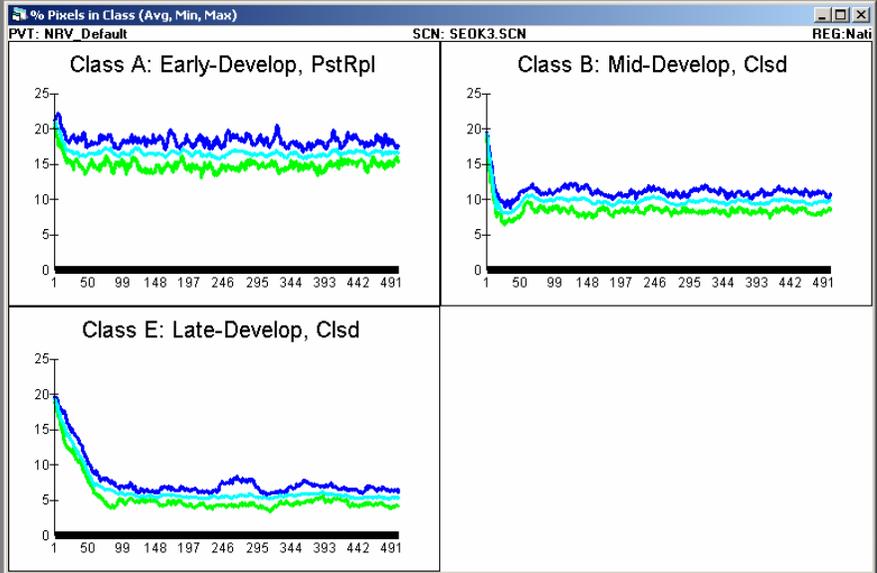
Include screen captures (print-screens) from any of the VDDT graphs that were used to develop reference conditions.



Status
PVT: NRV_Default
SCN: SEOK3.SCN
REG:Nati
PRJ:
Unmodified

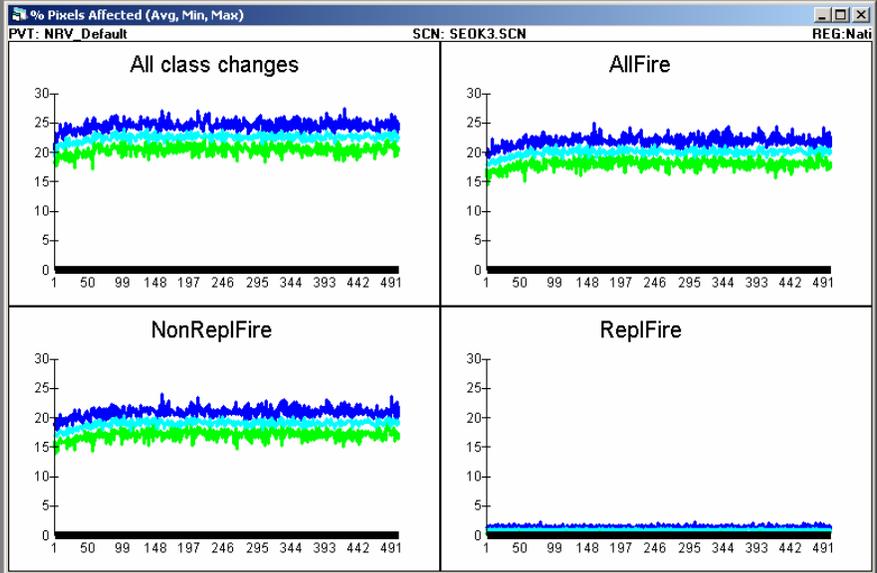
Successions...

Init. Conds: Years: 500 MC: 10 Attributes Dist. Mult. Annual Mult. Landscape Mult. Feedback Mult. Trend Mult. TSD On Dist. Disabled



Status
PVT: NRV_Default
SCN: SEOK3.SCN
REG:Nati
PRJ:
Unmodified

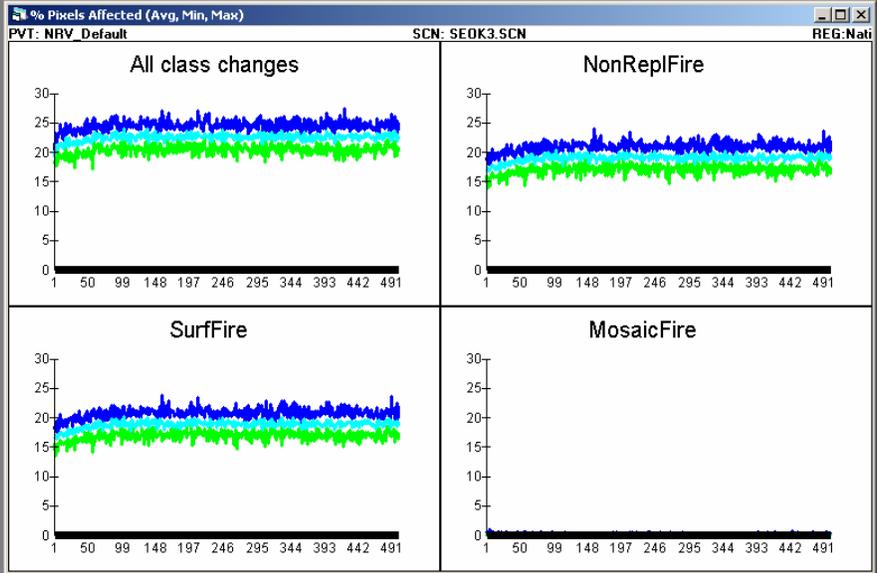
Successions...



Status
PVT: NRV_Default
SCN: SEOK3.SCN
REG:Nati
PRJ:
Unmodified

Successions...

Init. Conds: Years: 500 MC: 10 Attributes Dist. Mult. Annual Mult. Landscape Mult. Feedback Mult. Trend Mult. TSD On Dist. Disabled



Status
PVT: NRV_Default
SCN: SEOK3.SCN
REG:Nati
PRJ:
Unmodified

Successions...

Init. Conds: Years: 500 MC: 10 Attributes Dist. Mult. Annual Mult. Landscape Mult. Feedback Mult. Trend Mult. TSD On Dist. Disabled